

# ISSUE BRIEF

## SENATE POLICY DEVELOPMENT AND RESEARCH OFFICE

PREPARED IN CONJUNCTION WITH THE SENATE REPUBLICAN POLICY COMMITTEE

### Health Care-Associated Infections

#### Introduction

Deadly and expensive health care-associated infections (HAIs), also known as hospital-acquired infections, include pneumonia and bloodstream infections. They can occur as a result of relatively common procedures such as using an intravenous tube or catheter. Publicizing infection rates is intended to encourage individual health care facilities to take measures to prevent the spread of infections by increasing accountability and helping pinpoint effective prevention guidelines. Giving consumers access to these rates also allows them to make informed choices about where they receive care.

In July of 2005, Pennsylvania, through the Pennsylvania Health Care Cost Containment Council (PHC4), became the first state to publicly [report Hospital-Acquired Infection \(HAI\) statistics](#). Since that time, two subsequent infection reports have been issued. Florida and Missouri are the only other states that have issued reports on HAI data collected according to their state mandatory reporting laws.

***Absent action to reverse the increase in HAIs, 1.7 million patients nationwide will get an infection during a hospital stay this year, with about 270 dying per day, or 99,000 a year.***  
**CDC**

The two most virulent HAIs, methicillin-resistant Staphylococcus Aureus (MRSA) and Clostridium difficile (CDAD or C. diff), are particularly costly, lengthen patient hospitalization, and increase mortality.

Average hospitalization costs in 2005 for an uninfected versus an infected patient were \$8,311 versus \$53,915, a difference of \$45,604, according to the PHC4. Payments varied by the condition that brought a patient to the hospital. When treatment for circulatory system disorders are involved, an infection may raise costs to \$71,516 or \$59,460 more than the \$12,056 average treatment costs.

The average length of stay for uninfected versus infected patients in 2005 was 4.5 days versus 20.6 days. Mortality rates for the uninfected versus infected are 2.3 percent versus 12.9 percent, respectively. In all, 2005 hospital-acquired infections hit 12.2 per 1,000 patients requiring 394,129 hospital days and \$3.5 billion in hospital charges.

The number of cases of CDAD spiked from 7,026 in 1995 to 20,941 in 2005, according to (PHC4). MRSA, accounting for 22 percent of hospital staphylococcus (staph) infections in 1995, now accounts for 63 percent of those infections. The 2005 mortality rates for patients with and without CDAD were 8.7 percent and 2.1 percent, respectively. In 2004, mortality rates for patients with and without MRSA stood at 8.9 percent and 2.1 percent, respectively.

**Geographic differences** in the rate of CDAD hospitalizations in 2005 were found:

- The Southwestern Pennsylvania region (Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Washington and Westmoreland counties) had the highest rate of CDAD with 15.8 cases per 1,000 hospitalizations.
- The Northeastern Pennsylvania region (Bradford, Lackawanna, Luzerne, Monroe, Pike, Sullivan, Susquehanna, Wayne and Wyoming counties) had the lowest rate of CDAD with 7.6 cases per 1,000 hospitalizations.

**Geographic differences** in the rate of MRSA-related hospital discharges were found:

- The Southeastern Pennsylvania region (Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties) had the highest MRSA infection rate.

- The Southcentral Pennsylvania region (Adams, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Perry, and York Counties) had the lowest MRSA infection rate.

Factors implicated in the increase in infections include the over-prescribing of antibiotics, an aging population base, antibacterial cleansers, improved tracking, and technological advances. There is an increased incidence of HAIs among those 65 and older; those in community-based institutions; patients with diabetes, obesity, kidney dysfunction, open wounds; and, individuals with a weakened immune system.

### **Methicillin-resistant Staphylococcus Aureus (MRSA)**

Methicillin-resistant Staphylococcus Aureus (**MRSA**) is a type of bacteria implicated in cases of pneumonia, surgical wound infection, and bloodstream infection which is resistant to certain antibiotics; thriving in settings where immune systems are weak and incisions provide convenient ports of entry. The antibiotics to which it is resistant include methicillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin. Staph infections, including MRSA, occur most frequently among persons with weakened immune systems in hospitals and healthcare facilities (such as nursing homes and dialysis centers). The emergence of MRSA in the United States dates to the late 1960s. A quarter to a third of the US population is believed to carry MRSA and often without symptoms. [PHC4 looks at MRSA.](#)

### **Clostridium Difficile (CDAD or C. diff)**

Clostridium difficile is a spore-forming bacillus that produces a potent toxin affecting the central nervous system which is resistant to conventional antibiotics, including heat and disinfection. It is able to live up to 70 days on a surface. It thrives in hospitals and healthcare facilities where open wounds are present. C. difficile-associated disease (**CDAD**) ranges in severity from mild diarrhea to sudden and severe colitis, bloodstream infections, and death. In 2005, patients with CDAD were hospitalized two and a half times longer, charged more than twice as much and were four times as likely to die as patients without CDAD. [PHC4 looks at CDAD from 1995 to 2005.](#)

### **Policy Response**

Technological advances are making detection, tracking, and reporting of medical conditions possible for large and small healthcare facilities and institutions. At the same time, rates for hospital-acquired infection (HAI) have been on the increase in the last 20 years. The Centers for Disease Control and Prevention (CDC) concluded three methods exist for reducing HAI rates: 1) Screening, 2) Isolation and 3) Prevention. Institutions adopting all three procedures to cut infection rates and incorporating both the patient and the healthcare worker into the formula for prevention, achieve the greatest reductions.

**Screening** – The ability of new, DNA-based rapid-testing systems to identify drug-resistant strains of bacteria in a few hours allows health care facilities to isolate an infected patient immediately. Traditional screening required laboriously collecting swabs, growing laboratory cultures, and then testing them for resistance against key antibiotics; a process that can take days. The rapid test costs \$25 to \$30 per test, several times more than a traditional culture after factoring in labor and equipment costs. Screening is currently conducted by only 28 percent of hospitals with only a fraction of those using the rapid-testing devices. Healthcare facilities typically test only those who show signs of infection or in some cases, those considered at high risk.

Six months of screening every patient entering Newark Beth Israel Medical Center’s (NBIMC) intensive care unit slashed new MRSA infections to nearly zero and cut the proportion of intensive care patients carrying MRSA from 33 percent to 10 percent. Rapid-testing systems will be paid off within 3 or 4 years of introduction, according to NBIMC, through an annual savings of \$10,000. The Medical Center expects spending on vancomycin, the antibiotic of last resort for virulent infections, to drop by \$57,000.

**Isolation** -- An infected patient is treated in an isolation room. All coming into contact with the patient take special precautions, including wearing gloves, a cap, and a gown that are disposed of immediately. Equipment such as a stethoscope is not used on any other patients. The infected room is cleaned and disinfected from top to bottom upon the patient’s release.

Adopting screening and isolation to fight HAIs, the Pittsburgh Veterans Affairs Hospital cut the number of MRSA cases in 2006 from 60 cases annually to 17. The infection rate is down by 78 percent from the beginning of the hospital's screening and isolation program.

**Prevention --** Hygiene and education in a healthcare facility are critical to controlling the spread of HAIs. Screening and isolation coupled with a relentless focus on hygiene can reduce the rate of infections, as experienced at the Pittsburgh VA Hospital. Stocking every room and corridor with foamy hand sanitizer dispensers factored into the reduction. Several European countries, including the Netherlands and Finland, have all but eliminated MRSA through similarly aggressive campaigns incorporating screening, isolation and hygiene.

Opponents of the three-pronged approach, to cut infection rates cite the following reasons:

- Costs of sophisticated disease tracking hardware;
- Time is taken away from patient contact to complete reporting; and
- Patients in isolation receive less frequent care.

### **Legislation - 2007-2008 Session**

A new Pennsylvania law requires rapid and expanded reporting of infection. Hospitals and nursing homes must report infections within one day to state officials. Hospitals will also provide data to the National Health Safety Network at the Centers for Disease Control and Prevention (CDC). Tracking systems must be installed by December 31, 2008 and an infection reduction plan adopted by January 1, 2009. Pennsylvania will establish benchmarks for individual facilities to lower infection rates. Direct financial incentives for hospitals to reduce infections also will be incorporated by awarding bonus payments to hospitals that cut the number of HAIs by at least 10 percent.

[Senate Bill 968](#) (Erickson), Act 52 of 2007, amends the Medical Care Availability and Reduction of Error Act to establish procedures to reduce health care-associated infections. Among other provisions, this legislation:

- Requires that all health care facilities (hospitals and nursing homes) and ambulatory surgical facilities develop, implement, and enforce internal infection control plans, within 120 days of the effective date of section 403, to improve the health and safety of patients and health care workers.
- Mandates that infection control plans be developed by a multi-disciplinary committee and include procedures for requiring cultures and screenings for all nursing home residents and other high-risk patients admitted to a hospital.
- Requires that infection control plans be submitted to the Department of Health within two weeks after implementation to be reviewed to ensure compliance.
- Requires health care facilities and ambulatory surgical facilities to notify all health care workers and medical staff of the infection control plan.
- Provides for the reporting of health care-associated infections (HAI) by hospitals and nursing homes to the Department of Health, the Patient Safety Authority, and the Pennsylvania Health Care Cost Containment Council (PHC4). Data provided will be on a patient-specific basis. Nursing homes will report electronically in a manner to be determined by the Department of Health and the Patient Safety Authority, using Centers for Disease Control and Prevention (CDC) definitions in conjunction with national standards. Hospitals will report using the CDC's National Healthcare Safety Network (NHSN). Each hospital must authorize the Department of Health, the Patient Safety Authority and the PHC4 to access the NHSN database. Hospitals will be required to meet the current PHC4 reporting requirements until reporting to the CDC's database begins.
- Requires the Patient Safety Authority to publish a notice in the Pennsylvania Bulletin stating the uniform reporting requirements; establish uniform definitions using nationally recognized standards; create and conduct training programs for infection control; include HAIs in its annual report; and appoint an advisory panel that includes at least one non-profit nursing home, one for-profit nursing home, one county home, and two representatives from hospitals, at least one of which must represent a rural hospital.
- Requires hospitals to implement qualified electronic surveillance systems to help reduce the incidence of HAIs. Those hospitals not having an electronic surveillance system in place must do a strategic

assessment by December 31, 2007 to determine their ability and capacity to do so. Hospitals must have a system in place by December 31, 2008 unless it has been determined that it is not financially or technologically feasible.

- Requires that insurers and the Medical Assistance Program, upon approval by the federal government, reimburse for the full cost of routine cultures and screenings performed in accordance with a health care facility's and ambulatory surgical facility's infection control plan.
- Beginning in 2009, requires the Department of Public Welfare (DPW), in consultation with the Department of Health, to make quality improvement payments to health care facilities that achieve at least a 10 percent reduction in the total number of HAIs from the previous year. For each year thereafter, DPW will consult with the Department of Health to establish the appropriate percentage reduction.
- Establishes a public awareness campaign in the Department of Health to inform the public on the prevention and treatment of health care-associated infections and the proper use of antibiotics.
- Requires the Department of Health to develop recommendations for screenings and cultures for Methicillin Resistant Staphylococcus Aureus (MRSA) and Multi-drug Resistant Organism (MDRO) for "high risk" patients.
- Requires the Department of Health to develop and publish HAI rate benchmarks against which health care facilities will be measured.
- Requires nursing homes to pay a surcharge, beginning July 1, 2008, on their licensing fees. The total annual assessment could not exceed \$1 million in the aggregate. This money will be used to offset the additional costs to the Patient Safety Authority. Those who fail to pay the annual surcharge will be subject to penalties of \$1,000 per day for non-compliance.
- Provides that the failure of a health care facility to report health care-associated infections or the failure of a health care facility or ambulatory surgical facility to develop, implement and comply with its infection control plan is a violation of the Health Care Facilities Act. In addition to any penalty that may be imposed under the Health Care Facilities Act, a health care facility that negligently fails to report a health care-associated infection will be subject to an administrative penalty of \$1,000 per day.

## Federal Action

The federal government recently increased its efforts to curb costs associated with HAIs and targeted hospital Medicare reimbursements. In collaboration with the Centers for Disease Control and Prevention (CDC), the Centers for Medicare and Medicaid Services has created a list of six hospital-acquired conditions and, through a rule released in May of 2007, announced that hospitals no longer will receive payment for medical services used to treat any of the listed conditions if the condition was not present upon admission. Therefore, starting October 2008, hospitals will be paid as though certain infections never occurred.

## Resources:

SB 968 history: <http://ldp.legis.state.pa.us/WU01/LI/BI/BH/2007/0/SB0968.HTM> and <http://ldpc6.legis.state.pa.us/cfdocs/billinfo/billinfo.cfm?year=2007&ind=0&body=S&type=B&bn=968>

PHC4: <http://www.phc4.org>

Public Reports – Research Briefs: <http://www.phc4.org/reports/researchbriefs.htm>

PA Hospital-acquired infection rates -- Key Findings 2005: <http://www.phc4.org/reports/hai/05/keyfindings.htm>  
<http://www.phc4.org/reports/hai/05/default.htm>

PHC4 Research Brief - *Clostridium difficile* Infections in Pennsylvania Hospitals- News Release  
<http://www.phc4.org/reports/researchbriefs/051107/nr051107.htm>

MRSA Linked to Nearly 14,000 PA Hospitalizations in 2004:

<http://www.phc4.org/reports/researchbriefs/082506/nr082506.htm>

MRSA in Pennsylvania Hospitals:

[http://www.phc4.org/reports/researchbriefs/082506/docs/researchbrief2006report\\_mrsa.pdf](http://www.phc4.org/reports/researchbriefs/082506/docs/researchbrief2006report_mrsa.pdf)

Overview of Healthcare-associated MRSA: [http://www.cdc.gov/ncidod/dhqp/ar\\_mrsa.html](http://www.cdc.gov/ncidod/dhqp/ar_mrsa.html)